Rethinking Organizational Learning: Analyzing Learning Processes of Information System Designers

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Marleen Huysman

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Analyzing Learning Processes of Information System Designers

Marleen Huysman

Vrije Universiteit Amsterdam, Faculty of Economics, De Boelelaan 1105, 1081 HV Amsterdam, Tel +31 20 4446062 , Fax +31 20 4446005, mhuysman@ bik. econ.vu.nl

Abstract

The paper introduces an alternative perspective on organizational learning which counters various assumptions within most of the writings on organizational learning. By posing who-, how-, when-, and why-questions while reviewing the literature, four biases within the literature on organizational learning are identified. These biases concern respectively an individual learning bias, an active agency bias, a purposeful learning bias and an improvement bias. These hidden assumptions assure that most literature tends to lean unnecessary in certain directions, while overlooking others. The paper proposes several ways to counter these biases. A case story concerning the learning of old and new routines used by information systems designers is presented to illustrate the proposed alternative approaches to analyze organizational learning.

Keywords: organizational learning, information system designers, old-timers and newcomers, occupational routines.

Introduction

The variety of ways to conceptualize organizational learning (OL) has produced an 'organizational learning jungle' which is getting more and more dense and impenetrable (Prange 1996). Judging by the still-increasing amount of interest evidenced for example by special issues devoted to organizational learning (e.g. Organization Science 1991, 2 (1), Accounting, Management and Information Technology 1995, Journal of Organizational Change Management 1996, and Organizational Studies 1996), there seems to be a need to organize and structure our thinking concerning the concept. This paper too can be seen as a contribution to structure the jungle by analyzing critically the way OL researchers approach the subject and to propose an alternative way of analyzing OL.

Theories on organizational learning should provide answers to or at least suggest ideas to the following related questions: Who learns, How do they learn, When do they learn, Why do they learn, and What do they learn? Reviewing the literature with these questions in mind confirms earlier findings that there exist many different viewpoints on the subject (e.g. Dodgson 1993, Levitt and March 1988, Huber 1991, Fiol and Lyles 1985, Tatchenkery 1996). Posing these questions also shows that these contributions to the field of OL are in various respects biased. The biases concern hidden ideas and assumptions behind most of the OL literature'. As a result of theses biases, the received theories on OL lean unnecessarily in certain directions while overlooking others. By analyzing ways they answer the who, how, when and why question, we have identified four biases of OL researchers. Because of these diverse ways in which researchers tend to address the question 'what is leaned?', we cannot refer to a general assumption or bias from which researchers answer this question. For example, some refer to procedures, routines and

rules (Cyert and March 1963, Levitt and March 1988), others to knowledge (Huber 1991, Duncan and Weiss 1979), yet others refer to cognitions (Argyris and Schön 1978, Hedberg), behavior (Weick and Roberts 1993) or both (Fiol and Lyles 1983).

In this paper we attempt to indicate how these biases could be balanced. The case story on the learning processes that took place at an information system design department, provides an example of an alternative approach to learning that is as far as possible free from these four identified biases[2].

Identifying biases

Who learns?: 'the individual learning bias'

Addressing the question 'who learns' while reviewing the literature, leads to an identification of a bias within most literature on OL towards perceiving individuals as the learning agents. Perhaps the most cited controversy within the field of OL is the difference between individual learning and organizational learning (e.g. Kim 1993, Fiol and Lyles 1985, Jones 1995, Hedberg 1981).

Some authors support the idea that it is the individual who acts and learns within the organizational framework (e.g. Simon 1991, Dodgson 1993). "Individuals are the primary learning entity in firms and it is individuals which create organizational forms that enables learning in ways which facilitate organizational transformation"(Dodgson 1993, p. 377). Often, the term 'organizational' is taken as referring to the site of learning, as in the term rural or environmental (Jones 1995). Learning organizations are organizations that create structures and strategies which facilitates the learning of all its members (e.g. Pedler et al. 1991, Garvin 1993, Senge 1990).

Others consider OL as a metaphor and use individual learning as a model for understanding certain types of collective organizational activity. Although OL occurs through individuals, it should not be seen as a cumulative result of the learning of its members (Hedberg 1991). Argyris and Schön (1978) argue that organizations do not literally remember, think or learn. If individual member's theories are not encoded in organizational theories, then the individual has learned but the organization has not. A similar assumption is taken by Kim (1993) who argues that "organizations can learn independent of any specific individual but not independent of all individuals"(p. 37). Other writers such as Duncan and Weiss (1979), Hedberg (198 1), Huber (1991), Weick and Westley (1996), Fiol and Lyles (1985), and Cyert and March (1963) take a similar point of view by accepting the organizational instead of individual aspect of learning while at the same time still claiming that individuals are the principal agents of OL.

In order to overcome this dominance of the individual as learning unit, some have proposed a cultural perspective on OL (e.g. Weick and Robert 1993, Weick and Westley 1996, Brown and Duguid 1991, Cook and Yanow 1993). Literature on OL as a cultural process is slim, but seems to be growing (Weick and Roberts 1996). A cultural perspective focuses less on individual cognition and behavior and more on what goes on in the practice of groups. Cultures of groups and organizations like the cultures of societies, tribes and communities have a collective nature; there is no such thing as the culture of an individual. Consequently, approaching learning as culture has the advantage of focusing on organizational rather than on individual aspects of learning. In the words of Normann (1993): "I would interpret the increasing interest in the concept of culture as really an increasing interest in organizational learning - in understanding and making conscious and effective as much as possible all the learning that has taken place in an organization".

OL approached from a cultural perspective can be seen as a process of (re-) constructing organizational knowledge whereas organizational knowledge is seen as shared values, stories, practices, meanings, beliefs, etc. (e.g. Levitt and March 1988, Pentland 1995). As will be illustrated with the case story, when learning is seen from a cultural perspective, the level of analysis is the group rather than the individual.

How do organizations learn?: the 'active agency bias'

Posing the question how do organizations learn, reveals what might be called an active agency learning bias. This bias refers to the tendency within the literature to see learning as an activity in which a single learner learns from the environment and who is more-or-less free to choose how to learns, what to learn and from whom to learn. In fact, this tendency can be divided into two implicit assumptions within the literature:

1) the assumption that learning agents are voluntaristic agents thereby overlooking issues of path dependency and power that might influence learning

2) the assumption that learning is one-way directed, ignoring the mutual character that might influence learning.

It can be stated that many authors who have analyzed OL ignore issues of deterministic forces and consequently provide us with a rather romantic picture of an organization consisting of people able to 'create the future' (Senge 1990). There are at least three ways in which this voluntaristic image is complicated: the influence of the past, the power of dominant coalitions, and the influence of institutional forces.

To a large extent, learning is influenced by past learning. The organizational knowledge that is constructed and reconstructed during the course of its existence influences the future by determining what new knowledge will be seen as useful to adopt and what knowledge is not (Downs 1966). However, many OL researchers seem to be

rather a-historical. In the next section, while dealing with the purposeful learning bias, we will return to this aspect of path dependent or history-dependent learning.

Secondly, dominant coalitions within the organizations have a stake in deciding what knowledge will be considered 'organizational' knowledge. In other words, dominant coalitions, being the gatekeepers of organizational knowledge, have the power to 'objectify' individual knowledge into organizational knowledge (Berger and Luckman 1966). As such, dominant coalitions like management or a critical mass of organizational members, 'fill and refill' the formal organizational memory. Power is an important issue that is often omitted from reports on learning, which assume that learning agents have a free will, not being constrained by forces of power. The case story presented in section three will provide examples of the constraining power of dominant coalitions during learning processes.

Thirdly, learning can be constrained by institutional forces. When the environment from which the organization learns is seen as institutionalized, the learning often involves "adapting to external pressures on the organization to demonstrate that they are acting in collectively valued purposes in collectively valued ways" (Levitt and March 1988). As the case story will illustrate, institutional environments may influence the 'free will' of learning agents.

Another assumption implicit in the literature which creates an uncomplicated picture of learning, is the tendency to see learning as one directed: a single learner learns from an exogenous environment. Some authors do however argue that organizational learning often involves mutual learning (e.g. Levinthal and March 1994, Levitt and March 1988, March 1991). Learning in one part of the organization interacts with the learning in other parts; learning in one organization interacts with learning in other organizations. In a mutual learning situation, two (or more) learning units adapt to one another. This

adaptation often occurs at different rates; quick learners change more than do slow learners (March 1991). The case story will describe this dynamic interplay between learning of the environment and learning of the organization.

When do organizations learn?: 'the purposeful learning bias'

Posing the question: "when do organizations learn", reveals a so-called 'planned learning' bias. Learning is often referred to as an activity that deliberately takes place and thus can be planned for. For example, Argyris and Schön (1978) and Argyris (1990) argue that, in order to radically change basic assumptions, defensive routines can be brought to the surface when open communication sessions are organized. These organizational development tools can be designed beforehand and can be used in various situations. In line with Gregory Bateson (1973) the authors refer to so called 'deutero learning' (second order learning) when dealing with the institutionalization of these learning processes. Institutionalized processes of learning are to be found for example in research and development departments and planning and marketing departments (McKee 1992).

Another example of deutero learning which has become popular in today's writing on OL, is 'the Learning Organization' concept (Burgelman 1990, De Geus 1988, Garvin 1993, Senge 1990, 1992, Stalk et al. 1992, Stata 1989). Learning Organizations are organizations that are deliberately 'created' as to facilitate the learning of its members. It is often claimed that these learning organizations can anticipate their future learning behavior. Planned learning has also been subject to those writers who argue that organizations can learn through the use of information systems. In general, authors within this perspective assert that information systems can be built to support this deutero or institutionalized learning (e.g. Boland et al 1994, Jelinek 1979, Johnson-Laird 1988, Shrivastava 1983, Stata 1989).

These and other contributions tend to overlook the more accidental and path dependent nature of organizational learning. As mentioned earlier, individual members or, specifically managers, are not able to fully engineer the future. Also, organizations are often confronted with internal as well as external unanticipated events. These events limit the possibility of planned learning.

A way to challenge the purposeful-learning bias is by approaching learning as being an integral part of the organizational evolution; through learning organizations evolve. Because the course of the evolution depends upon the sequence of particular branches that are realized along the way, organizational learning processes are not easily predicted - with obvious implications for planning processes.

By perceiving learning as an integral part of organizational evolution, the attention is directed away from planned learning and more towards the historically dependent, stochastic, and emergent nature of learning. This is not to say that learning cannot be planned for. Indeed, most learning processes within organization are planned for, for example when technologies are implemented or when consultants are hired. But when we see learning as an ongoing process, we might become aware of unintentional learning processes that otherwise were left out. The case story provides some illustrations of learning processes that were unplanned and unnoticed by the actors involved..

Why do organizations learn?: 'the improvement bias'

Organizational learning has typically been linked to increased effectiveness. Many share the assumption that "learning will improve future performance"(Fiol& Lyles 1985). This so-called 'improvement bias' refers to the tendency to perceive learning as resulting in positively valued outcomes, treating other outcomes of the same process as less or even not relevant. According to Weick and Westley (1996), OL is often approached as an

achievement verb (Sandelands and Drazin 1989). As a result, it conceals rather than reveals the dynamics of the process of learning. When OL is treated as a process verb, more attention would be given to these dynamics leaving the issue if learning results in positively valued outcomes, for further investigation.

The learning curve theory, as being one of the first contributions to OL, already assumed that learning results in improvement. Observations done by the US Air-force showed that for a given activity, the hours per unit were found to decrease by a constant percentage each time total repetitions of the activity doubled (Ascher 1965). This drop in costs was attributed to learning taking place every time the worker repeated the task. Organizations are believed to have learned when their performances have improved.

Proponents of the 'Learning Organization' such as Garrat (1987), Garvin (1993), Pedler et al (1991) and Senge (1990) also positively value learning. A learning organization is seen as a form of organization that enables the learning of its members in such a way that it creates positively valued outcomes, such as innovation, efficiency, better alignment with the environment, and competitive advantage. Again, the focus is not so much on the process of learning but more on conditions that may flourish successful outcomes.

A reason why most of these proponents link learning with improvement is the modernistic believe in prosperity and truth (Tatchenkery,1996 Addleson 1996). Much of the literature on OL is directed towards creating 'useful' knowledge (Prange 1996). From this modernistic standpoint it directly follows that learning is something to strive for since organizations become more knowledgeable whenever they learn.

Learning as studied as a process might however just as well result in negatively valued outcomes. For example, OL might result in conservatism or path dependency due, for example, to incomplete learning cycles (Kim 1993, March and Olsen 1978), to

confusion of simultaneous learning (Levinthal and March 1993), or to defensive tendencies among organizational members to protect themselves from open confrontation and criticism (Argyris and Schön 1978).

Balancing the 'improvement bias' thus calls for studying learning as a process instead of as an outcome. Whereas an outcome perspective focuses on activities that result in organizational efficiency, intelligence and flexibility, a process perspective is more likely to reveal the underlying dynamics of learning which either produce or impede positively valued outcomes. The case story will provide several examples of problematic learning.

Until so far, we have introduced four biases within the literature on OL. We have also proposed ways to counter these biases assuming that a more-or-less balanced view on OL can be introduced. Figure 1 provides a schematic picture of this balanced perspective on OL in relation to the OL literature in general. In the third column the four different aspects concerning OL are portrayed as a dimension, ranging from one extreme to the other. Ideal-typically, we have positioned the general literature on OL as represented on one side of this dimension. By positioning the proposed 'balanced' perspective in the middle, we imply - again ideal-typically - that this perspective incorporates both sides of the same dimension.

In the following sections, we will elaborate further on this alternative perspective. This will be done by introducing a case example of learning processes and subsequently analyzing the learning processes from the proposed alternative perspective.

Who learns?	Individual learning bias	*Individual* — *Organization* OL literature in general — 'balanced perspective'
How do they learn?	Active agency bias	*Voluntarism* — *Determinism* OL literature in general — 'balanced perspective'
When do they learn?	Purposeful learning bias	*Purposeful* — *Accidental* OL literature in general — 'balanced perspective'
Why do they learn?	Improvement bias	*Improvement* — *Decline* 01 literature in general — 'balanced perspective'

Table 1 Biases within the literature on OL

However, in order to be able to introduce such an alternative perspective, it should be clear to what this perspective is an alternative to. We believe it is possible to identify an overall bias that finds expressions in the four assumptions within the OL literature discussed so far. This overall bias can be found in the managerial discourse that tends to inform the literature on OL (Elkjaer 1998). This managerial perspective looks at the phenomenon as an organizational activity that can and should be managed in order to improve organizational performances. As such it stimulates the improvement bias within the literature on OL. Managers are more interested in how to improve the organization than in other outcomes of learning processes. The managerial perspective also feeds the dominant image of the individual as a learner. Managers in a learning organizations are supposed to manage the individual cognitions and actions within the organizations in such a way that individuals contribute to the organizational learning processes, for example

through education and training and by engaging in self-reflection and open communication (Elkjaer 1998). A managerial perspective also stimulates the idea that managing is a voluntaristic process (Putnam and Pacanowsky 1983). Consequently, OL seen from a managerial perspective results in the assumption that learning should be approached from an active agency standpoint; individuals are able to create learning organizations, or in the words of Senge "The leaders task is designing learning organizations" (199 1, p. 345). The managerial discourse is perhaps most present within the purposeful learning bias which stimulates a view of learning as a planned and designed activity. Seen from a managerial standpoint, it is more interesting to understand how to improve and stimulate OL processes rather than to describe accidental learning processes.

Consequently, the present attempt can also be seen as an effort to introduce an alternative perspective to the managerial perspective that informs most of the literature on OL. In the following, we will illustrate our ideas with a case study on OL processes taking place at an information system design department.

Learning of information system designers, a case story

The following story is based on a qualitative case study that has been conducted at an information system design (ISD) department at the Netherlands Railways (NS). Attention is centered on how both existing and new occupational routines, as important elements of organizational knowledge, were constructed, reconstructed or kept in touch during the moment the department was established until the end of study: 1983 - 1994. The purpose of presenting the story is to illustrate how learning can be approached without the four

biases that have been identified above. Specifically, it illustrates a case of learning by studying the developments and influences of the culture of the department. Furthermore, it provides examples of learning influenced by various forces of power and by the occurrence of mutual learning processes. It also illustrates that learning might occur unintentionally and unnoticed. Finally, and also as a result of the above, it provides examples of problematic learning.

Ethnographic research methods were used based on observations, interviews, and document-analysis. The study was conducted during half a year, for two and a half days per week on average. Almost half of all the fifty people employed at the department where interviewed whereas most of these interviews were repeated again after several months. Next to the information system designers and the manager, interviews were held with a personnel manager, with some users of the systems designed by the ISD department (the "users"), and with the general IS manager of NS. The interviews had an unstructured character; I asked people to reflect on their experiences in order to delve more deeply into the individual perceptions of the situation. All interviews were tape recorded and fully transcribed. Information was also obtained from documents such as notes of department meetings and policy documents. I changed offices four times, sharing rooms with different groups of system designers which allowed me to observe their day to day activities. Observations took also place during five plenary meetings, and participation in social events such as drinks, lunches, "outings", etc.

Because the research is based on recall data, it is possible that the actors gave simplified impressions about their experiences, noticing some aspects while leaving other parts unmentioned and maybe exaggerating other situations. There are various reasons why this problem of hindsight will not influence drastically the descriptions of the social

situations of the various actors involved. First, the accounts given by the various members of the department did not differ much from each other. Secondly, one and a half year later, after a presentation of the research-findings to some of the actors involved, most system-designers felt that their experiences matched the presented research findings. Only the new manager of the department said the findings were not in all aspects in line with what had happened at the department. One reason could be that the case was studied more from the perspectives of the designers than from a managerial perspective. Another explanation could be that the manager was not fully aware what actually was going on among the designers. I will return to this point later in the discussion.

The ISD department under study came into existence in 1984 by splitting up a former computer department - focusing primarily on programming - into programming and design departments. From the members of this former computer department a group of about twenty-five people were selected who conformed to the job-criteria of IS designer, such as the level of education and the years of appointment at NS.

Although some in-house training courses in IS design were offered, most designers continued using the same standards that guided their previous job as computer programmer. They all had an engineering background, which was needed during their former job as computer programmer and which mirrored the general occupational background at the railways. This engineering conception remained the dominant perspective from which the tasks related to system-designing was approached. For example, when I asked them about the causes of the perceived complexity of their present job, most designers used paper and pen or a blackboard to illustrate how various data-fields were interconnected, for example by mapping various existing databases with new systems.

Next to an engineering conception that survived the change in occupation, working in more or less solitude was another legacy of their years of programming. Although IS design is usually done in project teams, the former programmers continued to design most IS systems on their own. Consequently, the learning that occurred among these former programmers was highly individual; the sharing of experiences only occurred sporadically. As a result, the evolution of the information systems function did not bring about a significant change in the dominant occupational routines.

In the beginnings of the nineties the railways introduced a reform policy to "double the amount of rails", which also meant an increase in demand for design and redesign of information systems. System designers were hired on a more permanent basis; new entrants were brought in and the existing group of former-programmers was extended. Most of these "newcomers" were hired from outside. As a result of their past educational and professional experiences, these newcomers were in some aspects different from the existing group of designers: the "old-timers". Almost all newcomers were younger than forty while almost all old-timers were older than forty. Besides age, the new group of IS designers had learned from past experience during their education and previous jobs, occupational routines that contrasted those traditionally employed at the railways. For example, while old-timers mainly perceived their tasks from an engineering perspective, newcomers believed that IS design is a social activity. When asked about the causes of the complexity of the job, newcomers referred to the difficulty in understanding the needs of the users, and with the problem of users not able to foresee what information-needs they will have in the future:

> ***"Actually we work as sociologists, we constantly try to distillate one reality out of all the different stories users tell us . . . that seems to be pretty difficult for some people around here. "***

Because the old-timers shared offices with the newcomers and from time to time cooperated in projects with them, their workpractices made it possible to learn from the new occupational routines that the newcomers introduced. However, these interactions hindered more than stimulated mutual learning processes. As one newcomer remarked:

> ***"I know some people of whom I think that given the systems they deliver, that these people.. they don't belong here anymore. You see, in the past, a lot of people, people who did not grow up within the age of automation but who happened to roll into it... they obtained some knowledge and have been stuck into it. That's it. They haven't changed a bit. And still they persist in their competence. Really, they're not of much use".***

This failure to introduce 'new' occupational routines within the department was partly a result of a dominant coalition that was formed by the old-timers and the manager. Like many old-timers, the department manager had received an engineering education, was a former programmer and worked for more than twenty years at NS. According to this manager, things did not need a change, after all, the demand for designing IS's only grew. Consequently, without being inhibited by management, the old-timers continued doing what they always did. Introducing new routines was also blocked by the lack of communication between old-timers and new-comers. For example, attempts of the newcomers to convince the old-timers that the department needed to change, for example by proposing walkthroughs, standard documentation for functional designs, or by proposing the use of standard methodology, mostly ended up in frustration from the side of the newcomers. A new-comer remarked:

> ***"So you try to improve the communication yourself. But it's.., maybe it's a cliche, but it has to come from both sides and there are always colleagues, to put it mildly..., well, we sometimes call them a couple of snoozers."***

Thus, although the ISD department had the possibility to learn new organizational knowledge, nothing really changed among the old-timers. In contrast, instead of the old-timers learning from the newcomers, the newcomers gradually adapted to the existing work-practices that were used by the old-timers. Since past efforts to make a change at the organizational level were mostly suppressed or ignored, they gradually learned to work according to the guiding occupational routines letting their learned occupational routines go.

Two years after the introduction of a reform plan to increase the amount of services, the decision was made to commercialize the railways; it was time to revitalize the company including the IS departments. Top information managers of NS discussed the position, function and strategy of the information systems department. This discussion was also fed by negative outcomes of inquiries held among the users of the information systems. The inquiries made it public that the ISD department was often too late in delivering systems, that the systems did not match the specifications of the users, that the department was considered as operating too bureaucratically, and that designers were accused of hardly ever visiting its customers. Informed by these negative results, top management replaced the department manager by a much younger and highly career minded manager who belonged to a more professional world of ISD. Unlike most designers who identified themselves with AZ, this manager identified himself more with the world of commercial software houses. He propagated the necessity to become more "cost-aware, client-friendly and commercially minded" and asked for the participation of the department members in a quality circle program that he had initiated. While some newcomers welcomed these change processes, most designers showed a general lack of interest. This seeming passivity was mainly due to past experiences. From their years of

working at AZ, newcomers experienced that their attempts to change work-practices were mostly played down. One of them expressed it as such:

> ***"I like his (the new-manager MH) ideas, I've proposed them myself more than once, you know. But Z want to see it first... Z don't want to be the first again, I'm not going to stick my neck out anymore.***

In case of the old-timers, past experience was based on ten to thirty years of working for AZ. During these years, most old-timers learned that a manager primarily controls its subordinates, that communicating informally with these managers is not in order and that you should not run the risk of being perceived as different. Consequently, the new manager's appeal to participate actively in the quality circles, was answered by much sceptism. For example, one of the old-timers answered the question as to why he didn't participate in the change process in the following way:

> ***"[It] doesn't interest me, look that's for the bosses, it's not my job . . . Z would like to be good in what Z am doing, but Z am not paid for other things, if so they must pay me more ".***

AZ also had a history of many reforms which had been initiated but never put into practice. From this experience of "reforms as a routine" (Brunsson and Olsen 1993) the old-timers became skeptical about future reform attempts:

> ***".. . first everything had to be centralized and now everything must be decentralized, soon if it's all decentralized, everything must be centralized, it's a strange experience, Z must say"***

The manager in turn learned from this expressed passivity and reacted by using more authoritative and oppressive rhetorics:

> ***"If they are not willing to change, we do not need them anymore".***

At this point, my agreed-upon research period ended. One and a half year later when the analysis of the research was presented, the department manager had moved to a commercial consultancy firm and was succeeded by one of the new-comers. The department was significantly reorganized without people being dismissed although some of the old-timers were appointed to another job within NS or took an early retirement.

Discussion

In this section I will discuss how the story provides empirical examples of challenging the four identified biases. In short, the story provides illustrations of an approach to learning that relaxes

- the individual action ***bias*** by perceiving learning from a cultural perspective;
- ***the active agency bias*** by perceiving learning as influenced by history, by issues of power and by mutual learning processes;
- the ***purposeful learning bias*** by acknowledging unnoticed and unintended learning processes;
- ***the improvement bias*** by illustrating learning processes that did not result in organizational improvement and intelligence.

In section two it was argued that the ***individual learning bias*** can be balanced by approaching OL from a cultural perspective. The case story illustrates how the culture of a department was reaffirmed through learning. The case analysis exemplifies OL as a collective rather than an individual activity. Organizational knowledge, such as shared

meanings, values and beliefs come about and are maintained through interactions among members of the organization. Mostly this knowledge is shared through artifacts of the organizational culture and is often implicit: stories, languages, routines, etc. The knowledge of the group of IS designers did not reside in individual designers but in the group of designers. In fact, because this knowledge has over the years become deeply embedded in the practices of the designers, the group of practitioners have created a shared culture that cannot be reduced to a cumulation of individual characteristics. The case also illustrates the difficulty of changing a group culture and consequently the problems organizations face with re-formation, re-organization, or re-structuring through learning. Although the new group of IS designers was able potentially to change the organization into a new direction, the newcomers were unable to change the existing culture of the group of old-timers.

Thus, besides perceiving culture as a result of learning, culture might also influence subsequent learning processes. To put it differently, culture is past learning and this past learning simultaneously effects future learning. The existing culture of the organization under study heavily influenced the way for example old-timers adapted to the new knowledge that was introduced by the newcomers. Over time, this learning created a situation in which the department under study consisted of two almost separate cultures. The story exemplifies processes of socialization of newcomers and internalization of the organization as learning processes. Newcomers learned from the organization while the organization learned from the newcomers (see also Cook and Yanow 1993, March 1991).

Balancing the active *agency* bias is needed to relax the assumption that individuals and organizations are free in choosing how, when, and what to learn. The case provides various illustrations of how the learning of the department was influenced by various deterministic forces that frustrated a picture of learning as a rational engineering activity.

First of all is the influence of the past which characterized the routine, path dependent character of the learning at NS. Past learning of the old-timers for example, influenced for a large part the way the old-timers learned during the time of research. Without comprehending their past learning, it would have been difficult to understand their present learning. For example, old-timers learned in the past a certain way of relating to managers which had been part of the traditional culture at the railways. These past experiences made it difficult for them to cope with a new manager who almost insisted in their active participation in managerial issues.

Secondly is the power of dominant coalitions in influencing what knowledge will or will not be or remain organizational knowledge. At NS, old-timers including management acted as important gatekeepers of knowledge. For example, newcomers propagated to the old-timers to communicate more frequently with users, to make use of standard design methodology, to write up end-reports and to use 'walk-throughs'. Old-timers however did not see any reason to learn from the newcomers. Backed up by management, they had the power to neglect the new knowledge.

Thirdly is the power of institutional forces. When the environment of the organization is seen as an institutionalized one, the reform attempts to commercialize the railways can be seen as a forced learning process. In fact, by reforming its operations, NS adapted practices that were considered 'modern' at that time. In the 1970's for example, many reforms were aimed at making organizations more democratic and decentralized and so did NS. During the 80's and the 90's, this normative framework changed radically: the focus switched to efficiency and "the model for attempts at reorganizing the public sector was an idealized picture of private enterprise. The aim of most reform attempts was to improve efficiency by adapting to market forces and encouraging competition"(Brunsson and Olsen 1993, p. 10). Likewise, during the beginnings of the nineties, NS was

influenced by other organizations - mainly through the intervention of the Government as 'owner' of the company - to become a more commercial oriented organization. This was further triggered by the hiring of external consultants who introduced models of commercialized organizations that they also used when consulting other public organizations who were changing into a commercial company. In a way, the organization was forced by its institutional environment to reorganize and to learn new organizational principles.

Another way to challenge the active-agency perspective is to attend to the reciprocity between two or more learning units. This mutual learning happened at NS between the group of old-timers and the group of newcomers. In fact, the story illustrates that this 'mutual learning' may encourage both convergent or divergent mutual learning processes. In its extreme form, convergent mutual learning involves learners adapting to each other such that they draw closer to each other until they are identical. During divergent mutual learning reinforcement of dissimilarities occurs. Instead of dissolving differences between the various learning units, the differences will be sharpened. Over time, the learning units draw apart from each other. Again, the rate of learning of the learning units influences this process. The mutual learning that occurred among the two groups of system designers can be typified as 'imbalanced mutual learning'. The old-timers did not seem to learn from the newcomers, whereas some of the newcomers over time, adjusted to the existing occupational routines. In other words, because some of the newcomers acted as quick learners while the old-timers acted as slow learners, unbalanced convergent learning occurred.

The case story was also free from a ***purposeful learning bias.*** The story shows that learning is not necessarily a planned endeavor and that the organization was mostly not aware of the occurrence of these learning processes. The story provides descriptions of

learning processes that evolved over the last ten years. Sometimes learning was planned for, for example as was the case with the inquiries among the users of the IS's. Learning processes may also be unplanned and/or unnoticed which was for example the case with the mutual learning processes that occurred among the newcomers versus the old-timers. Because individuals are often so much integrated in their day to day context, they can become blind to changes at the level of the group or organization that their actions bring about (e.g. Ciborra and Lanzarra 1994). Often awareness may prevent the organization from negatively valued outcomes of learning. For example, one can argue on hindsight, that if the organization had had been aware of the introduction of new knowledge being introduced by newcomers, the occurrence of many problems and reform attempts might have been prevented. Unintentional learning not always results in inefficiencies. Although this clearly seemed the case at AZ, Ciborra and Lanzarra (1994) for example empirically illustrated how unplanned learning may indeed foster innovation and change.

As mentioned, the *improvement bias* can be challenged by approaching learning as a process rather than an achievement. The discussion up till now implicitly revealed the consequences of studying learning as a process. In fact, the story illustrates several inefficiencies as an outcome of learning, both as a result of being unnoticed as well as a result of institutional forces. For example, the learning among the group of old-timers can be considered as 'narcistic'. As a group, old-timers were not triggered to adjust to new occupational routines newcomers tried to introduce within the organization. As a result, learning happened within existing cognitive frameworks, overlooking potentially valuable knowledge that did not confirm to these frameworks. Most strikingly perhaps is the negligence of feedback signals from the side of the department manager. Although there were various signals made by the customers which pointed to a discontention, management failed to take these signals into account. It is not the purpose of this paper to

unravel these and many other inefficiencies in order to understand the underlying dynamics of learning processes that constitute them. What the story in terms of this present paper illustrates is that by approaching learning as a process instead of as an achievement, its complicated nature might reach the surface.

Finally, every attempt to analyze the literature on OL is based on one or more assumptions, and this present approach is no exception. Indeed, by trying to reveal certain assumptions behind most of the writings on OL and by introducing ways to balance them, the paper proposed an alternative approach to the managerial perspective to OL. This alternative approach has some similarities with an emerging perspective that might be labeled 'interactionist' (Elkjaer 1998) or 'social consttuctivist' (Richter 1996). This new perspective can be seen as the counterpart of the dominant managerial perspective on OL. Such a managerial perspective has a normative character, informing managers how organizations could and should learn (Elkjaer 1998). Learning is seen as valuable since it helps organizations to increase their efficiency and competitiveness. The origins of the perspective can mainly be found in organizational development theories, theories on strategic management and systems theory. An alternative perspective looks at learning as it takes place in situ, situated in ongoing practices within organizations. The perspective is mainly descriptive while it predominantly originates from organizational sociology and cultural anthropology. Although such an 'interactionist' or 'social constructivist' perspective has not (yet) been crystallized out, the impression is that it is gaining increased acceptance among researchers. We hope this paper has contributed to the development of an alternative approach to OL or at least to a rethinking of the way OL is approached in general.

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[1] We do not want to argue that these four biases are an exhausting discussion of possible biases in the OL literature. For example, OL researchers tend to see the organization more from a harmonious perspective in which people like to learn and work together and they tend to treat OL from a Western oriented viewpoint. Because we use the basic questions as starting point leading to an identification of the four biased, these and many other biases are not discussed in this paper.

[2] In a way, this paper can be considered an attempt to deconstruct writings on OL. Deconstruction is an activity that has become popular with the work of Jacques Derrida. Derrida's object in deconstruction is to reveal the ambivalence and double binds that lie latent in any text (Cooper 1989). Surely, Derrida's deconstruction of texts is in many aspects different from the present effort to identify biases. Most importantly, different from the present effort, Derrida is not criticizing a text nor is he interpreting it. After all, criticizing and interpreting a text means that one uses an already existing framework which serves to analyze the texts. It was not our intention to follow a post-modernistic endeavor of deconstructing the field of OL. Our aim is to stimulate the ongoing discourse on OL rather than to finish it.